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Dear Prof. de Ruyter van Steveninck,

It is a pleasure to recommend Yohannes Shiferaw, PhD, for a faculty position in your department. Yohannes studied Physics at Franklin and Marshall University, where he distinguished himself with a number of awards, including the Frank Durell Enck Memorial prize in Physics (1995), and a Kershner Scholarship in Physics and Astronomy (1995). He also ranked of 330 out of 2700 nationwide in the Putnam mathematical competition (1993) and was third in the Albright mathematical competition (1992). He subsequently went on to obtain his PhD in Theoretical Physics on the statistical properties of polymers in random media from the University of Pittsburgh in 2001. Afterwards, he began a postdoctoral fellowship in the Department of Physics at Northeastern University, under the guidance of my colleague and collaborator Alain Karma. After finishing his postdoctoral fellowship with Dr. Karma, I recruited Yohannes to UCLA as a postdoctoral fellow to work with our group in applying mathematical modeling and nonlinear dynamics, in combination with experimental biology, to the study of cardiac arrhythmias. I have worked closely with Yohannes both before and after his arrival at UCLA, and therefore feel qualified to evaluate him.

Yohannes is extremely talented, and will be a great asset to any department interested in applications of nonlinear dynamics and mathematical modeling to biology. In my experience, there are many physicists who, despite superb quantitative skills, have great difficulty in transferring those talents to biological problems. The mindset is very different and requires an ability to integrate a large body of incomplete and often conflicting experimental data into a tractable mathematical model. Yohannes has been exceptional in this regard. While still in Boston, we had several meetings in which we reviewed many of the experimental aspects of Ca cycling in cardiac tissue – Yohannes used this limited interaction and his extensive reading of the relevant literature to develop, on his own, a very sophisticated knowledge of the biological processes involved (well beyond that of his mentor, who is not a biologist). He went on to develop a new mathematical model of Ca cycling in heart. This paper was published in the *Biophysical Journal*, and represents a landmark study which provides, for the first time, a model containing the essential dynamics of Ca cycling in the heart. This model has now formed the cornerstone for all of our group's current investigations into the interactions between membrane voltage and Ca cycling in

cardiac fibrillation, the most common cause of sudden cardiac death. Since arriving at UCLA and working side-by-side with experimental biologists, Yohannes has continued to expand his knowledge of the cardiac field and make novel contributions. He has extended his work on Ca cycling to the interaction with membrane voltage, and has a submitted manuscript which provides novel mechanistic insights into the dynamics which lead to discordant alternans, a precursor to lethal ventricular fibrillation. While at UCLA, he has supervised a graduate student of Dr. Karma's (who is on sabbatical this year) in the theoretical studies with great effectiveness. He also worked closely with a postdoctoral fellow of our colleague Dr. Peng-Sheng Chen to uncover key experimental data supported his theoretical conjectures.

Yohannes is personable, and gets along well with his colleagues,both students, peers and superiors. He is articulate, and has become adept at explaining theoretical concepts to biologists without less quantitative backgrounds. I would love to have Yohannes stay with our own group as a faculty member, and will try to keep him if I can find the resources. I am pleased to recommend him in the strongest possible terms.

Sincerely,

James N. Weiss, MD